PATRIOT CHOP CHECK FLUID SECTION MANUAL

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MagnumVenusProducts™

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Terms & Conditions of Sale:

GSSC, Inc.'s Terms & Conditions of Sale ("Terms & Conditions") 588284v4

1. ACCEPTANCE: Acceptance of any purchase order from a customer or potential customer ("Buyer") is subject to credit approval by GSSC, Inc. ("Seller"), acceptance of the purchase order by Seller and, when applicable, any manufacturer, vendor, or other third party that provides goods to Seller for resale to Buyer ("Vendor"). If Seller, in its sole discretion, determines that Buyer's credit becomes unsatisfactory or it has reasonable grounds for insecurity, Seller reserves the right, upon notice to Buyer, to demand adequate assurance of due performance from Buyer and/or terminate any purchase order with no liability to Seller. BY REQUESTING A QUOTE FROM SELLER, ACCEPTING AN INVOICE FROM SELLER, OR PRESENTING A PURCHASE ORDER TO SELLER, BUYER CONFIRMS THAT THESE TERMS & CONDITIONS SHALL GOVERN ALL PURCHASES OF PRODUCTS OR MATERIALS PROVIDED TO BUYER BY SELLER ("GOODS"). GOODS SOLD BY SELLER ARE EXPRESSLY SUBJECT TO THE TERMS AND CONDITIONS SET FORTH HEREIN AND ANY DIFFERENT OR ADDITIONAL TERMS OR CONDITIONS SET FORTH IN A PURCHASE ORDER OR SIMILAR COMMUNICATION RECEIVED FROM BUYER ARE OBJECTED TO AND SHALL NOT BE BINDING UPON SELLER UNLESS SPECIFICALLY AGREED TO IN WRITING BY AN AUTHORIZED CORPORATE OFFICER OF SELLER.NO SELLER EMPLOYEE OR AGENT HAS THE AUTHORITY TO MODIFY THESE TERMS & CONDITIONS VERBALLY. SELLER OBJECTS TO AND REJECTS ANY TERMS BETWEEN BUYER AND ANY OTHER PARTY, AND NO SUCH TERMS, INCLUDING BUT NOT LIMITED TO ANY GOVERNMENT REGULATIONS OR "FLOWDOWN" TERMS, SHALL BE A PART OF OR INCORPORATED INTO ANY PURCHASE ORDER FROM BUYER TO SELLER, UNLESS AGREED TO IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF SELLER.

2. PRICES AND TAXES: Buyer agrees to pay the prices quoted by Seller or listed on any related invoice, and is responsible for additional applicable shipping and handling charges, taxes, duties, and charges for import and export licenses and certificates. All prices quoted by Seller are subject to change without notice. Seller will generally collect applicable taxes along with the purchase price unless Buyer submits a valid tax exemption certificate, and indicates which Goods are covered by it. Prices on special-order Goods may be subject to change before shipment. In order to be corrected, any discrepancies in pricing and/or quantities on invoices must be reported by Buyer within thirty (30) days of the invoice date.

3. PAYMENT: Payment terms are 30 days net from the invoice date or upon such other terms approved by Seller in writing. Retainage shall not apply, and Buyer shall not hold back any retainage from Seller, even if retainage is part of any contract between Buyer and any other party. Payment is not contingent on Buyer's ability to collect or obtain funds from any other party. Credit card sales are billed at the time of purchase. Buyer expressly represents it is solvent at the time it places any purchase order with Seller. Seller, in its sole discretion, may determine that Buyer's financial condition requires full or partial payment prior to manufacture or shipment. If Buyer fails to make any payment when due, Seller reserves the right to suspend performance. Buyer agrees to pay a charge on all amounts past due at the rate of 1 ½% per month (18% per year) or the maximum lawful rate, whichever is less. In the event of non-payment, Buyer agrees to pay Seller's reasonable attorney fees and court costs, if any, incurred by Seller to collect payment, and all applicable interest charges. Seller may apply payments to any outstanding invoices unless Buyer provides specific payment direction.

4. TITLE AND RISK OF LOSS OR DAMAGE: As to Goods delivered directly by Seller, title passes upon delivery at the place Buyer receives possession; and, thereafter, all risk of loss or damage shall be on Buyer. All other sales are F.O.B., point of shipment, and Buyer takes title and assumes responsibility for risk of loss or damage at the point of shipment for such sales. Claims for Goods damaged in transit are Buyer's sole responsibility when not delivered directly by Seller.

5. QUOTATIONS: All quotations expire thirty (30) days from the date of the quotation unless otherwise noted on the quotation. This time limit applies even if Buyer uses the quotation to submit a job or project bid to any other party.

6. ASSIGNMENT: The Buyer's rights and responsibilities under any purchase order or these Terms & Conditions shall not be assigned by Buyer without the express written consent of the Seller.

7. RETURN OF GOODS: Permission to return items must be requested and granted in advance. No credit will be given if items are returned prior to requesting and receiving permission. Subject to the foregoing, Seller shall accept returns of Goods for any reason for a period of thirty (30) days following shipment for exchange or refund of the purchase price; provided, that such Goods must be unused and are subject to a 15% restocking charge, which may be increased or decreased, in the Seller's sole discretion, depending on the reason for such return. Any Goods which were special ordered by Buyer are may not be returned, and any such Goods which are returned are subject to a restocking/cancellation fee of 100% of the cost of the Goods. Goods shall be deemed accepted by Buyer (and cannot thereafter be returned), if Buyer fails to object to the Goods within thirty (30) days after the Goods are received by Buyer.

8. CANCELLATION: The Buyer may cancel any purchase order prior to shipment of the Goods by mutual agreement of the parties and upon payment to Seller of reasonable and proper cancellation charges.

9. TERMINATION: Seller may terminate the whole or any part of any purchase order if there is a material breach of these Terms & Conditions. In the event of any such breach, the Seller will provide Buyer with written notice of the nature of the breach and the Seller's intention to terminate for default. In the event Buyer does not cure such failure within ten (10) days of such notice, Seller may, by written notice, terminate the purchase order; provided, that Buyer shall continue its performance to the extent not terminated.

10. CHANGE IN BUYER'S FINANCIAL CONDITION: Seller reserves the right to cancel any order or to require full or partial payment in advance without liability to Seller in the event of: (i) insolvency of the Buyer; (ii) the filing of voluntary petition in bankruptcy by Buyer; (iii) the appointment of a Receiver or Trustee for the Buyer; (iv) the execution by Buyer of an assignment for benefit of creditors; or (v) past due payment on previous shipments to Buyer by Seller. Seller reserves the right to cancel Buyers credit at any time for any reason.

11. INTERPRETATION RESPONSIBILITY; PRODUCT USE AND SAFETY: Seller does not guarantee that the Goods it sells conform to any plans and specifications or intended use. When plans and specifications are involved, Buyer is solely responsible for verifying Seller's interpretations of such plans and specifications, and it is Buyer's sole responsibility to assure that Seller's Goods will be acceptable for any specific job. When Seller offers substitute Goods on any proposal, Buyer is solely responsible for confirming their acceptability.

12. DELIVERY: Shipping dates given in advance of actual shipment are approximate and not guaranteed. All contract dates and timelines begin upon receipt by Seller of a purchase order, Buyer's acceptance of these Terms & Conditions, and the payment of any required down payment.

13. EXCUSABLE DELAYS: Seller shall have no liability if its performance is delayed or prevented by causes beyond its reasonable control, including, without limitation, acts of nature, labor disputes, government priorities, transportation delays, insolvency or other inability to perform by any Vendor, or any other commercial impracticability. In the event of any such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of delay. If Goods are held or stored beyond the delivery date for the convenience of Buyer, such Goods shall be so stored at the risk and expense of Buyer.

14. CLAIMS: Claims for any nonconforming Goods must be made by Buyer, in writing, within ten (10) days of Buyer's receipt of such Goods and must state with particularity all material facts concerning the claim then known to Buyer. Failure by Buyer to give notice within such ten (10) day period shall constitute an unqualified acceptance of such Goods by Buyer, and a waiver of any right to reject or revoke acceptance of such Goods.

15. WARRANTIES:
(a) SELLER'S WARRANTIES: Seller warrants that all Goods sold shall mechanically operate as specified and shall be free from faults in respect to materials and workmanship for a period of: (i) for parts, twelve (12) months from the date of invoice, and (ii) for systems, twelve (12) months from start-up, or, if earlier, eighteen (18) months from the date of the bill of lading. Seller also warrants that the Goods shall, upon payment in full by Buyer for the Goods, be free and clear of any security interests or liens. Buyer's exclusive remedy for breach of such warranties shall be limited to repair or replacement costs or termination of any security interests or liens, and Seller shall have no responsibility for reimbursing repair costs incurred by Buyer in connection with Goods without first giving written authorization for such charges. In any claims by the Buyer against the Seller in respect of the Goods, the liability of the Seller shall be limited to the value of the Goods. This warranty applies only to Goods properly used and maintained and does not apply to any Goods which are misused or neglected, or which has been installed, operated, repaired, altered or modified other than in accordance with instructions or written authorization by Seller. This warranty does not apply to any Goods not manufactured by Seller, and Buyer's sole warranty with respect to such Goods shall be that of the Seller's Vendor, if any.
(b) VENDOR'S WARRANTIES: Seller shall assign to Buyer any Vendor warranties and/or remedies provided to Seller by its Vendor.
(c) INTELLECTUAL PROPERTY INFRINGEMENT: SELLER DISCLAIMS ANY AND ALL WARRANTIES AND/OR INDEMNIFICATIONS AGAINST INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS OF ANY NATURE. SELLER SHALL, IF GIVEN PROMPT NOTICE BY BUYER OF ANY CLAIM OF INTELLECTUAL PROPERTY INFRINGEMENT WITH RESPECT TO ANY GOODS SOLD HEREUNDER, REQUEST THE APPLICABLE VENDOR TO GRANT FOR THE BUYER SUCH WARRANTY OR INDEMNITY RIGHTS AS SUCH VENDOR MAY CUSTOMARILY GIVE WITH RESPECT TO SUCH GOODS.
(d) LIMITATIONS: THERE ARE NO OTHER WARRANTIES WRITTEN OR ORAL, EXPRESS, IMPLIED OR BY STATUTE. SELLER SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO REPAIR OF GOODS OR OTHER COSTS ARE ASSUMED BY SELLER UNLESS AGREED TO, IN ADVANCE, IN WRITING.
16. LIMITATIONS OF LIABILITY: UNLESS APPLICABLE LAW OTHERWISE REQUIRES, SELLER'S AND ANY VENDOR'S TOTAL LIABILITY TO BUYER, BUYER'S CUSTOMERS OR TO ANY OTHER PERSON, RELATING TO ANY PURCHASES GOVERNED BY THESE TERMS & CONDITIONS, FROM THE USE OF THE GOODS FURNISHED OR FROM ANY ADVICE, INFORMATION OR ASSISTANCE PROVIDED BY SELLER (BY ANY METHOD, INCLUDING A WEB SITE), IS LIMITED TO THE PRICE OF THE GOODS GIVING RISE TO THE CLAIM. NEITHER SELLER NOR ITS VENDORS SHALL BE LIABLE FOR ANY SPECIAL, INCIDENTAL, DIRECT, CONSEQUENTIAL OR PENAL DAMAGES, INCLUDING, BUT NOT LIMITED TO BACKCHARGES, LABOR COSTS, COSTS OF REMOVAL, REPLACEMENT, TESTING OR INSTALLATION, LOSS OF EFFICIENCY, LOSS OF PROFITS OR REVENUES, LOSS OF USE OF THE GOODS OR ANY ASSOCIATED GOODS, DAMAGE TO ASSOCIATED GOODS, LATENESS OR DELAYS IN DELIVERY, UNAVAILABILITY OF GOODS, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES OR SERVICES, DOWNTIME, OR CLAIMS FROM BUYER'S CUSTOMERS OR OTHER PARTIES. IF SELLER FURNISHES BUYER WITH ADVICE OR OTHER ASSISTANCE WHICH CONCERNS ANY GOODS SUPPLIED HEREUNDER, OR ANY SYSTEM OR EQUIPMENT IN WHICH ANY SUCH GOODS MAY BE INSTALLED, AND WHICH IS NOT REQUIRED PURSUANT TO THESE TERMS & CONDITIONS, THE FURNISHING OF SUCH ADVICE OR ASSISTANCE WILL NOT SUBJECT SELLER TO ANY LIABILITY, WHETHER BASED ON CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE) OR OTHER GROUNDS.
17. BUYER'S USE OF GOODS: Many factors beyond Seller's control contribute to the success of the Buyer's finished products, such as raw materials used to manufacture the products. Seller is not liability for the quality or quantity of finished products produced by Buyer with the use of the Goods.
18. EXPORTS: If Goods are sold for export, Seller's standard terms & condition for export sales, if any, shall also apply. Acceptance of export orders is not valid unless confirmed in writing by Seller. Buyer, and not Seller, is responsible for compliance with all United States export control rules and regulations. Buyer shall not name Seller as shipper or exporter of record in connection with the export of any Goods purchased from Seller.
19. INSTALLATION: Installation of the Goods is the responsibility of Buyer, unless otherwise indicated in the quotation or invoice provided to Buyer. Notwithstanding the foregoing, however, Seller will provide installation supervision personnel within thirty (30) days of Buyer's request. If an installation for which the Seller is to participate is delayed by the Buyer more than six (6) months after the date of shipment of the Goods, or if Buyer's facility, materials, or parts are not prepared for installation for such period of time, Seller shall be entitled to invoice the Buyer for the anticipated installation costs, up to $1,250 per day plus expenses, for each of Seller's installations technicians which are on site.
20. ANTI-MONEY LAUNDERING RESTRICTIONS: Seller rejects questionable purchase orders and payments: Except for pre-approved credit arrangements, Seller rejects third-party payments, cashiers' checks, money orders and bank drafts. Seller accepts only checks imprinted with Buyer's name; wire transfers originated in Buyer's account; letters of credit with Buyer as account party; and credit or debit cards in Buyer's name. All payments must be by single instrument in the amount of the invoice, less credits, from banks acceptable to Seller.
21. GOVERNING LAW: These Terms & Conditions and all disputes related to it shall be governed by the laws of the State of Florida, United States of America, without giving effect to its conflict of law rules.
22. JURISDICTION AND VENUE: The parties hereby irrevocably submit to the jurisdiction of the state courts of the State of Florida and to the jurisdiction of the United States District Court for the Middle District of Florida, for the purpose of any suit, action, or other proceeding related to, arising out of or based upon these Terms & Conditions or in any way related to, arising out of or involving sale of Goods hereunder; waive and agree not to assert by way of motion, as a defense, or otherwise, in any such suit, action, or proceeding, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that the suit, action, or proceeding is brought in any inconvenient forum, that the venue of the suit, action, or proceeding is improper, or that these Terms & Conditions or the subject matter hereof may not be enforced in or by such court; and waive and agree not to seek any review by any court of any other jurisdiction which may be called upon to grant an enforcement of the judgment of any such Florida state or federal court. The parties hereby consent to service of process by registered mail at the address to which notice is to be given. The exclusive venue for any proceeding under these Terms & Conditions shall be solely in any state court in Pinellas County, Florida, or the Federal District Court for the Middle District of Florida, Tampa Division, sitting in Tampa, Florida. Buyer acknowledges that the prices for Goods offered hereunder are in part dependent on Buyer's consent to jurisdiction in Florida and exclusive venue in Pinellas County, Florida or the Federal District Court for the Middle District of Florida, Tampa Division, sitting in Tampa, Florida, and without Buyer's consent to this jurisdiction and venue provision the prices for the Goods may be higher.
23. GENERAL: Any representation, affirmation of fact and course of dealing, promise or condition in connection therewith or usage of trade not contained herein, shall not be binding on either party. If any provision hereof shall be unenforceable, invalid or void for any reason, such provision shall be automatically voided and shall not be part of these Terms & Conditions and the enforceability or validity of the remaining provisions of these Terms & Conditions shall not be affected thereby.

TO THE EXTENT NOT CONTRARY TO APPLICABLE LAW, THE FOLLOWING SHALL APPLY:
24. Buyer waives any available homestead exemption as well as any and all requirements or rights with regard to notice, demand, presentment.

IMPORTANT NOTICE: *THIS INSTRUMENT PERMITS SELLER TO OBTAIN AND USE YOUR INDIVIDUAL CREDIT HISTORY FOR CREDIT EVALUATION PURPOSES.*

SAFETY & WARNING INFORMATION:

OPERATING YOUR POLYESTER SYSTEM SAFELY

1. Introduction

Any tool, if used improperly, can be dangerous. Safety is ultimately the responsibility of those using the tool. In like manner, safe operation of polyester processes is the responsibility of those who use such processes and those who operate the equipment. This manual outlines procedures to be followed in conducting polyester operations safety. This system has been specifically designed for use of Polyester Resin, Gel-Coat, and Methyl Ethyl Ketone Peroxides (MEKP) applications. Other formulations or blends considered for use in this equipment is strictly prohibited without the expressed consent by Magnum Venus Products Inc. Magnum Venus Products cannot eliminate every danger nor foresee every circumstance that might cause an injury during equipment operation. Some risks, such as the high pressure liquid stream that exits the spray tip, are inherent to the nature of the machine operation and are necessary to the process in order to manufacture the end-product. For this reason, ALL personnel involved in polyester operations should read and understand the Safety Manual. It is very important for the safety of employees involved in the operation that equipment operators, maintenance and supervisory personnel understand the requirements for safe operation. Each user should examine his own operation, develop his own safety program and be assured that his equipment operators follow correct procedures. Magnum Venus Products hopes that this manual is helpful to the user and recommends that the precautions in this manual be included in any such program. Magnum Venus Products recommends this Safety Manual remain on your equipment at all times for your personnel safety. In addition to the manual, Magnum Venus Products recommends that the user consult the regulations established under the Occupational Safety & Health Act (OSHA), particularly the following sections:

1910.94 Pertaining to Ventilation.

1910.106 Pertaining to flammable liquids

1910.107 Pertaining to spray finishing operations, particularly Paragraph (m) Organic Peroxides and Dual Component Coatings.

Other standards and recognized authorities to consult are the National Fire Protection Association (NFPA) bulletins as follows:

NFPA No.33 Chapter 14, Organic Peroxides and Dual Component Materials

NFPA No.63 Dust Explosion Prevention

NFPA No.70 National Electrical Code

NFPA No.77 Static Electricity

NFPA No.91 Blower and Exhaust System

NFPA No.654 Plastics Industry Dust Hazards

Type of Fire Extinguishing equipment recommended: Fire Extinguisher – code ABC, rating number 4a60bc.

Extinguishing Media – Foam, Carbon Dioxide, Dry Chemical, Water Fog.

Copies of the above bulletins are available, at a nominal charge from:

National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02210

Research Report No.11 of the American Insurance Association deal with “Fire, Explosion and Health Hazards of Organic Peroxides”. It is published by:

American Insurance Association
85 John Street
New York, NY 10038

Local codes and authorities also have standards to be followed in the operation of your spraying equipment. Your insurance carrier will be helpful in answering questions that arise in your development of safe procedures.

1.2 Personal Safety Equipment

Magnum Venus Products recommends the following Personal Safety Equipment for conducting safe operations of the Polyester Systems:

Magnum Venus Products recommends that the user consult the state and local regulations established for all Safety equipment listed.

2.0 Material Safety

2.1 Hazards Associated with Laminating Operations

The major hazards which should be guarded against in polyester laminating operations are those associated with:

1. The flammability and explosion dangers of the catalyst normally used – Methyl Ethyl Ketone Peroxide (MEKP).

2. The flammability dangers of clean-up solvents sometimes used (Magnum Venus Products recommends that clean-up solvents be non-flammable), and of resin diluents used, such as styrene.

3. The flammability dangers of catalyst diluents, if used. (Magnum Venus Products recommends that catalyst not be diluted.

4. The flammability dangers of the uncured liquid resins used.

5. The combustibility dangers of the cured laminate, accumulations of over spray, and laminate sandings.

6. The toxicity dangers of all the chemicals used in laminating operations with respect to ingestion, inhalation and skin and eye hazards.

2.2 Catalyst (Methyl Ethyl Ketone Peroxide)

MEKP is among the more hazardous materials found in commercial channels. The safe handling of the "unstable (reactive)" chemicals presents a definite challenge to the plastics industry. The highly reactive property which makes MEKP valuable to the plastics industry in producing the curing reaction of polyester resins also produces the hazards which require great care and caution in its storage, transportation, handling, processing and disposal. MEKP is a single chemical. Various polymeric forms may exist which are more or less hazardous with respect to each other. These differences may arise not only from different molecular structures (all are, nevertheless, called "MEKP") and from possible trace impurities left from the manufacture of the chemicals, but may also arise by contamination of MEKP with other materials in its storage or use. Even a small amount of contamination with acetone, for instance, may produce an extremely shock-sensitive and explosive compound.

Contamination with promoters or materials containing promoters, such as laminate sandings, or with any readily oxidizing material, such as brass or iron, will cause exothermic "redox" reactions which can become explosive in nature. Heat applied to MEKP, or heat build-up from contamination reactions can cause it to reach what is called its Self-Accelerating Decomposition Temperature (SADT).

Researchers have reported measuring pressure rates-of-rise well in excess of 100,000 psi per second when certain MEKP's reach their SADT. (For comparison, the highest pressure rate-of-rise listed in NFPA Bulletin NO.68, "Explosion Venting", is 12,000 psi per second for an explosion of 12% acetylene and air. The maximum value listed for a hydrogen explosion is 10,000 psi per second. Some forms of MEKP, if allowed to reach their SADT, will burst even an open topped container. This suggests that it is not possible to design a relief valve to vent this order of magnitude of pressure rate-of-rise. The user should be aware that any closed container, be it a pressure vessel, surge chamber, or pressure accumulator, could explode under certain conditions. There is no engineering substitute for care by the user in handling organic peroxide catalysts. If, at any time, the pressure relieve valve on top of the catalyst tank should vent, the area should be evacuated at once and the fire department called. The venting could be the first indication of a heat, and therefore, pressure build-up that could eventually lead to an explosion. Moreover, if a catalyst tank is sufficiently full when the pressure relief valve vents, some catalyst may spray out, which could cause eye injury. For this reason, and many others, anyone whose job puts them in an area where this vented spray might go, should always wear full eye protection even when laminating operations are not taking place.

Safety in handling MEKP depends to a great extent on employee education, proper safety instructions and safe use of the chemicals and equipment. Workers should be thoroughly informed of the hazards that may result form improper handling of MEKP, especially in regards to contamination, heat, friction and impact. They should be thoroughly instructed regarding the proper action to be taken in the storage, use and disposal of MEKP and other hazardous materials used in the laminating operation. In addition, users should make every effort to:

A. Store MEKP in a cool, dry place in original containers away from direct sunlight and away from other chemicals.

B. Keep MEKP away from heat, sparks and open flames.

C. Prevent contamination of MEKP with other materials, including polyester over spray and sandings, polymerization accelerators and promoters, brass, aluminum and non-stainless steels.

D. Never add MEKP to anything that is hot, since explosive decomposition may result.

E. Avoid contact with skin, eyes and clothing. Protective equipment should be worn at all times. During clean-up of spilled MEKP, personal safety equipment, gloves and eye protection must be worn. Fire fighting equipment should be at hand and ready.

F. Avoid spillage, which can heat up to the point of self-ignition.

G. Repair any leaks discovered in the catalyst system immediately, and clean up the leaked catalyst at once in accordance with the catalyst manufacturer's instructions.

H. Use only original equipment or equivalent parts from Magnum Venus Products in the catalyst system (i.e.: hoses, fitting, etc.) because a dangerous chemical reaction may result between substituted parts and MEKP.

I. Catalyst accumulated from the purging of hoses or the measurement of fluid output deliveries should never be returned to the supply tank, such catalyst should be diluted with copious quantities of clean water and disposed of in accordance with the catalyst manufacturer's instructions.

The extent to which the user is successful in accomplishing these ends and any additional recommendations by the catalyst manufacturer determines largely the safety that will be present in his operation.

2.3 Clean-Up Solvents and Resin Diluents

WARNING

A hazardous situation may be present in your pressurized fluid system! Hydrocarbon Solvents can cause an explosion when used with aluminum or galvanized components in a closed (pressurized) fluid system (pump, heaters, filters, valves, spray guns, tanks, etc.). The explosion could cause serious injury, death and/or substantial property damage. Cleaning agents, coatings, paints, etc. may contain Halogenated Hydrocarbon Solvents. Some Magnum Venus Products spray equipment includes aluminum or galvanized components and will be affected by Halogenated Hydrocarbon Solvents.

A. There are three key elements to the Halogenated Hydrocarbon (HHC) solvent hazard.

a. The presence of HHC solvents. 1,1,1 – Trichloroethane and Methylene Chloride are the most common of these solvents. However, other HHC solvents are suspect if used; either as part of paint or adhesives formulation, or for clean-up flushing. b. Aluminum or Galvanized Parts. Most handling equipment contains these elements. In contact with these metals, HHC solvents could generate a corrosive reaction of a catalytic nature.

b. Equipment capable of withstanding pressure. When HHC solvent contact aluminum or galvanized parts inside a closed container such as a pump, spray gun, or fluid handling system, the chemical reaction can, over time, result in a build-up of heat and pressure, which can reach explosive proportions.

When all three elements are present, the result can be an extremely violent explosion. The reaction can be sustained with very little aluminum or galvanized metal; any amount of aluminum is too much.

A. The reaction is unpredictable. Prior use of an HHC solvent without incident (corrosion or explosion) does NOT mean that such use is safe. These solvents can be dangerous alone (as a clean-up or flushing agent) or when used as a component or a coating material. There is no known inhibitor that is effective under all circumstances. Furthermore, the mixing of HHC solvents with other materials or solvents, such as MEKP, alcohol, and toluene, may render the inhibitors ineffective.

B. The use of reclaimed solvents is particularly hazardous. Reclaimers may not add any inhibitors. Also, the possible presence of water in reclaimed solvents could feed the reaction.

C. Anodized or other oxide coatings cannot be relied upon to prevent the explosive reaction. Such coatings can be worn, cracked, scratched, or too thin to prevent contact. There is no known way to make oxide coatings or to employ aluminum alloys, which will safely prevent the chemical reaction under all circumstances.

D. Several solvent suppliers have recently begun promoting HHC solvents for use in coating systems. The increasing use of HHC solvents is increasing the risk. Because of their exemption from many State Implementation Plans as Volatile Organic Compounds

(VOC's), their low flammability hazard, and their not being classified as toxic or carcinogenic substances, HHC solvents are very desirable in many respects.

WARNING: **Do not use Halogenated Hydrocarbon solvents in pressurized fluid systems having aluminum or galvanized wetted parts.**

NOTE: **Magnum Venus Products is aware of NO stabilizers available to prevent Halogenated Hydrocarbon solvents from reaction under all conditions with aluminum components in closed fluid system.** ***TAKE IMMEDIATE ACTION…*** **Halogenated Hydrocarbon solvents are dangerous when used with aluminum components in a closed fluid system.**

A. Consult your material supplier to determine whether your solvent or coating contains Halogenated Hydrocarbon Solvents.

B. Magnum Venus Products recommends that you contact your solvent supplier regarding the best non-flammable clean-up solvent with the heat toxicity for your application.

C. If, however, you find it necessary to use flammable solvents, they must be kept in approved, electrically grounded containers.

D. Bulk solvent should be stored in a well-ventilated, separate building, 50 feet away from your main plant.

E. You should allow only enough solvent for one day's use in your laminating area.

F. "NO SMOKING" signs must be posted and observed in all areas of storage or where solvents and other flammable materials are used.

G. Adequate ventilation (as covered in OSHA Section 1910.94 and NFPA No.91) is important wherever solvents are stored or used, to minimize, confine and exhaust the solvent vapors.

H. Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107.

2.4 Catalyst Diluents

Magnum Venus Products spray-up and gel-coat systems currently produced are designed so that catalyst diluents are not required. Magnum Venus Products, therefore, recommends that diluents not be used. This avoids the possible contamination which could lead to an explosion due to the handling and mixing of MEKP and diluents. In addition, it eliminates any problems from the diluent being contaminated through rust particles in drums, poor quality control on the part of the diluents suppliers, or any other reason. If, however, diluents are absolutely required, contact your catalyst supplier and follow his instructions explicitly. Preferable, the supplier should premix the catalyst to prevent possible “on the job” contamination while mixing.

WARNING

If diluents are not used, it should be remembered that catalyst spillage, gun, hose and packing leaks are potentially more hazardous, since each drop contains a higher concentration of catalyst, and therefore will react quicker with over spray and the leak.

2.5 Cured Laminate, Overspray and Laminate Sandings Accumulation

A. Remove all accumulations of overspray, FRP sandings, etc. from the building as they occur. If this waste is allowed to build up, spillage of catalyst is more likely to start a fire; in addition, the fire would burn hotter and longer.

B. Floor coverings, if used, should be non-combustible.

C. Spilled or leaked catalyst may cause a fire if it comes in contact with an FRP product, over-sprayed chop or resin, FRP sandings or any other material with MEKP.

To prevent this spillage and leakage, you should:

1. Maintain your Magnum Venus Products System. Check the gun several times daily for catalyst and resin packing or valve leaks. REPAIR ALL LEAKS IMMEDIATELY.

2. Never leave the gun hanging over, or lying inside the mold. A catalyst leak in this situation would certainly damage the part, possibly the mold, and may cause a fire.

3. Inspect resin and catalyst hoses daily for wear or stress at the entry and exits of the boom sections and at the hose and fittings. Replace if wear or weakness is evident or suspected.

4. Arrange the hoses and fiberglass roving guides so that the fiberglass strands DO NOT rub against any of the hoses at any point. If allowed to rub, the hose will be cut through, causing a hazardous leakage of material which could increase the danger of fire. Also, the material may spew onto personnel in the area.

2.7 Toxicity of Chemicals

A. Magnum Venus Products recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No.33, Chapter 14, and NFPA No.91.

B. Contact your chemical supplier(s) and determine the toxicity of the various chemicals used as well as the best methods to prevent injury, irritation and danger to personnel.

C. Also determine the best methods of first aid treatment for each chemical used in your plant.

2.8 Treatment of Chemical Injuries

Great care should be used in handling the chemicals (resins, catalyst and solvents) used in polyester systems. Such chemicals should be treated as if they hurt your skin and eyes and as if they are poison to your body. For this reason, Magnum Venus Products recommends the use of protective clothing and eye wear in using polyester systems. However, users should be prepared in the event of such an injury. Precautions include:

1. Know precisely what chemicals you are using and obtain information from your chemical supplier on what to do in the event the chemical gets onto your skin or into the eyes, or is swallowed.

2. Keep this information together and easily available so that it may be used by those administering first aid or treating the injured person.

3. Be sure the information from your chemical supplier includes instructions on how to treat any toxic effects the chemicals have.

WARNING

Contact your doctor immediately in the event of any injury and give him the information you have collected. If your information includes first aid instructions, administer first aid immediately while you are contacting your doctor.

Fast treatment of the outer skin and eyes that contact such chemicals generally includes immediate and thorough washing of the exposed skin and immediate and continuous flushing of the eyes with lots of clean water for at least 15 minutes or more. These general instructions of first aid treatment, however, may be incorrect for some chemicals; that is why you must know the chemicals and treatment before an accident occurs. Treatment for swallowing a chemical frequently depends upon the nature of the chemical.

NOTE: **Refer to your System User Manual for complete and detailed operating instructions and service information.**

3.0 Equipment Safety

WARNING

Magnum Venus Products suggest that personal safety equipment such as EYE GOGGLES, GLOVES, EAR PROTECTION, and RESPIRATORS be worn when servicing or operating this equipment. Ear protection should be worn when operating a fiberglass chopper to protect against hearing loss since noise levels can be as high as 116 dB (decibels). This equipment should only be operated or serviced by technically trained personnel!

WARNING

Never place fingers, hands, or any body part near or directly in front of the spray gun fluid tip. The force of the liquid as it exits the spray tip can cause serious injury by shooting liquid through the skin. NEVER LOOK DIRECTLY INTO THE GUN SPRAY TIP OR POINT THE GUN AT OR NEAR ANOTHER PERSON. (TREAT THE GUN AS IF IT WERE A LOADED PISTOL.)

3.1 Emergency Stop Procedures

The following steps should be followed in order to stop the machinery in an emergency situation

1. The ball valve located where the air enters the power head of the resin pump, should be moved to the “OFF” or closed position. To do this, simply rotate the lever on the ball valve 90 degrees. Doing this will cause all the system air to bleed out of the system in a matter of a few seconds, making the system incapable of operating

NOTE: Step 2 is a precautionary step and should be followed whenever the above mentioned ball valve is activated to the stop mode. Failure to do so, can damage the regulators and components on reactivating to the “ON” position.

2. Turn all system regulators to the “OFF” position (counter-clockwise) position

NOTE: Verify that the Catalyst relief line, located on the catalyst manifold, and the resin return line, located on the resin filter, are secured relieving catalyst and resin fluid pressure.

3. Catalyst pressure in the catalyst pump can be eliminated by rotating the ball valve on the catalyst manifold 90 degrees to the “open” or “on” position.

Note: The “open” or “on” position is when the ball valve handle is parallel (in line) with the ball valve body. The “closed” or “off” position is when the ball valve handle is perpendicular (across) the ball valve body.

4. Resin pressure in the resin pump can be eliminated by rotating the ball valve on the resin filter 90 degrees to the “open” or “on” position. Place a container under the ball valve to catch any resin that is ejected out of the valve.

3.2 Grounding

Grounding an object means providing an adequate path for the flow of the electrical charge from the object to the ground. An adequate path is one that permits a charge to flow from the object fast enough that it will not accumulate to the extent that a spark can be formed. It is not possible to define exactly what will be an adequate path under all conditions since it depends on many variables. In any event, the grounding means should have the lowest possible electrical resistance. Grounding straps should be installed on all loose conductive objects in the spraying area. This includes material containers and equipment. Magnum Venus Products recommends grounding straps be made of AWG No.18 stranded wire as a minimum and the larger wire be used where possible. NFPA Bulletin No77 states that the electrical resistance of such a leakage path may be as low as 1 meg ohm (10 ohms) but that resistance as high as 10,000 meg ohms will produce an adequate leakage path in some cases. Whenever flammable or combustible liquids are transferred from one container to another, or from one container to the equipment, both containers or container and equipment shall be effectively bonded and grounded to dissipate static electricity. For further information, see **National Fire Protection Association** (NFPA) 77, titled "Recommended Practice on Static Electrical". Refer especially to section 7-7 titled "Spray Application of Flammable and Combustible Materials". Check with local codes and authorities for other specific standards that might apply to your application. NEVER USE HARD MATERIALS SUCH AS WIRE, PINS, ETC., TO CLEAR A PLUGGED GUN. HARD MATERIALS CAN CAUSE PERMANENT DAMAGE. DAB WITH A BRISTLE BRUSH, BLOW BACKWARDS WITH AIR UNTIL CLEAR WHILE WEARING A PROTECTIVE EYE SHIELD. REPEAT AS MANY TIMES AS NECESSARY. DO NOT PERFORM ANY MAINTENANCE OR REPAIRS UNTIL YOU HAVE FOLLOWED THE PRECAUTIONS STATED ABOVE. IF YOU, AS AN EQUIPMENT OPERATOR OR SUPERVISOR, DO NOT FEEL THAT YOU HAVE BEEN ADEQUATELY TRAINED OR INSTRUCTED AND THAT YOU LACK THE TECHNICAL KNOWLEDGE TO OPERATE OR PERFORM MAINTENANCE ON A PIECE OF MAGNUM VENUS PRODUCTS EQUIPMENT, PLEASE CALL MAGNUM VENUS PRODUCTS BEFORE OPERATING OR PERFORMING MAINTENANCE ON THE EQUIPMENT. IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE PRECAUTIONS OR ANY SERVICE OR OPERATION PRECEDURES, CALL YOUR MAGNUM VENUS PRODUCTS DISTRIBUTOR OR MAGNUM VENUS PRODUCTS.

NOTICE: All statements, information and data given herein are believed to be accurate and reliable but are presented without guaranty, warranty or responsibility of any kind express or implied. The user should not assume that all safety measures are indicated or that other measures are not required.

DANGER: Contaminated catalyst may cause Fire or Explosion. Before working on the catalyst pump or catalyst accumulator, wash hands and tools thoroughly. Be sure work area is free of dirt, grease or resin. Clean catalyst system components with clean water only.

DANGER: Eye, skin and respiration hazard. The Catalyst, MEKP, may cause blindness, skin irritation or breathing difficulty. Keep hands away from face. Keep food and drink away from work area.

WARNING: Please refer to your catalyst manufacturer's safety information regarding the safe handling and storage of catalyst. Wear appropriate safety equipment as recommended

Introduction:

This manual, the ***Patriot Chop Check Manual***, provides information you need to perform simple maintenance and repair on your equipment.

- Step-by-step assembly and disassembly procedures are included.

Please read the manual carefully. Follow the steps in the order given, otherwise you may damage the equipment or injure yourself. Be prepared by having a clean work area, tools and current parts drawing available.

DANGER: Always wear proper safety equipment, including eye protection and gloves when performing service and repair on this equipment. When removing Pump Fluid Section, Hoses and Resin Surge Chamber, be sure to bleed off fluid pressure from the system before disconnecting. Release Surge Chamber charge before removing Surge Chamber. System may be under pressure and cause injury.

This manual covers the following Fluid Section assembly:

- PAT-CCP-LS-0590 Patriot Chop Check Fluid Section
- PAT-CCP-LS-0590-SS Stainless Steel Chop Check Fluid Section

This manual covers the following Pump assembly:

- PAT-CCP-PA-1300-SS Stainless Steel Chop Check Pump Assembly
- PAT-CCP-PA-2300 Patriot Chop Check Pump Assembly

Note: The Fluid Section can be rebuilt in place or easily removed and taken to a workbench. Flushing the fluid section with suitable cleaning agent can make the rebuild process much easier.

During Disassembly . . .

As you disassemble the equipment, lay out the components in the correct order and direction. This will help you to reassemble them.

Tools required:

- Red Grease (6706-2-1 1 oz) (6706-2-16 16 oz) (6706-2-32 32 oz)
- PAT-LS-OIL (PAT-LS-OIL-1GL 1Gallon) (PAT-LS-OIL-5GL 5 Gallon)
- Loctite™ 243 (removable) or equivalent Removable Thread Locking Compound
- 5/16-inch Hex Wrench
- Hex Wrench Set (08469)
- 8-inch Adjustable Wrench (08467)
- 12-inch Adjustable Wrench (08468)
- 1/2-inch Wrench or 1/2" x 9/16" Combination Wrench (08476)
- 9/16-inch Wrench (08476) or 1/2" x 9/16" Combination Wrench (08476)
- Repair Kit: PAT-CCP-LS-0590-RK

IMPORTANT WARRANTY INFORMATION

Please note that components used on this equipment are made of specially developed, high-strength material.

- ❑ Only authentic Magnum Venus Products replacement parts are acceptable for use with this equipment.
- ❑ Use of unacceptable replacement parts will void our liability and warranty of this equipment.

Please contact your Magnum Venus Products distributor for more information.

Lubrication:

Throughout this manual, directions are given for lubricating various parts of the Fluid Section. These are the typical lubricants used:

- ❑ If the part contacts resin, use MVP Red Grease (6706-2-1).
- ❑ If the part is located where it will contact air, use Lubriplate® (08465).
- ❑ Throat Seal Oil (TSL-3200) used in the oil reservoir of the pump.
- ❑ Throat Seal Oil for use with ISO (TSL-ISO-800) 8 oz.
- ❑ Grease for use with ISO (GR-ISO-100) 1 oz.

DANGER: FIRE AND EXPLOSION HAZARD. Never use any lubrication on the components of the catalyst system. Contact your catalyst manufacturer for additional material handing information.

Fluid Section Removal:

1. Remove the Ram and Pump from the material.

2. Place a piece of plastic or paper under the Ram and Pump to catch any dripping material.

3. Put the pump into the lowest position of the down stroke.

4. Shift the Ram Control valve into the down position; allow pump and Ram to travel to the lowest position.

5. Disconnect the resin hose from the side of the Pump fluid section.

Warning: Be sure to remove fluid pressure from the system before disconnecting resin hose, tie rods or surge chamber. System may be under pressure and can cause injury.

6. Remove the E-Ring (F-ER-1.00-HD), lift up the Sleeve (PAT-PA-9109) and remove the two Connectors (APP-9096).

7. Remove the four Hex Nuts (F-HN-06C) and Lock Washers (F-SW-06) holding the fluid section to the Adapter Tie Rods (PAT-CCP-0522).

8. Shift the Ram Control valve into the Ram up position, move the ram up until the Adapter Shaft (PAT-CCP-0521) clears the Transition Plate (PAT-CCP-0503) this will allow the pump fluid section to be removed.

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Fluid Section Disassembly:

NOTE: As you disassemble, lay the parts out on a towel or rag in the order you take them apart. This will help you remember how they go back together. Inspect each part for wear or damage and note parts that require replacement.

NOTE: The procedures for disassembly of the Stainless Steel version and standard steel version will be the same. For part numbers see the correct drawing in the Parts Drawing section of this manual.

1. If not already done, move the pump to the bottom of the down stroke.
2. Unscrew the four Hex Nuts (F-HN-06C) from the end of the Tie Rods (PAT-CCP-0520).
3. Pull the Inlet Bell Flange (PAT-CCP-0537) off the Tie Rods (PAT-CCP-0520).
4. Remove Hex Bolt (F-HB-04F-08) from the bottom of the Priming Rod. If the Priming Rod spins put a wrench on the wrench flats of the Priming Rod just above the Priming Piston (PAT-CCP-0523).
5. Remove the Backup Washers (PAT-CCP-0528), Relief Washer (PAT-CCP-0525) and the Priming Piston (PAT-CCP-0523) from the Priming Rod.
6. Unscrew the Tie Rods (PAT-CCP-0520) out of the Outlet Body.
7. Pull the Cylinder out of the Outlet Body and off the Piston. This will also force the Intake Valve off the end of the Priming Rod.
8. Remove Lower Seat from out of the end of the Cylinder.
9. Remove the loose Intake Valve, Spacer and Valve Stop (PAT-CCP-0530) out of the end of the Cylinder.
10. Remove the Piston Bushing (PAT-CCP-0513) and Piston Seal Assembly (PAT-CCP-0514) out of the other end of the Cylinder.
11. Unscrew the Intake Valve Packing Nut (PAT-CCP-0532) from the Intake Valve
12. Remove both of the Foot Valve Seals (PAT-CCP-0536) from inside the Intake Valve
13. If necessary remove the Intake Bushing (PAT-CCP-0533) from inside the Valve Nut (PAT-CCP-0532).
14. Pull the Fluid Rod and Piston assembly out of the Outlet Body and Rod Seal assemblies (PAT-CCP-0516) – set a side for now.

15. Remove the Packing Nut (PAT-CCP-0504) from the top of the Outlet Body.

16. Remove the Rod Bushing (PAT-CCP-0505) and Rod Seal assemblies (PAT-CCP-0516) from the top of the Outlet Body.

PISTON and PISTON VALVE DISASSEMBLY:

Note: Clean and inspect all parts for wear and damage. Replace damaged parts and all parts provided in the repair and seal kits.

1. Unscrew the Piston Valve and Priming Rod from the Piston. Use caution, the piston ball may fall out and become damaged. If the ball falls onto a hard surface it may become scratched or get a flat spot on it.

2. Remove the Piston Ball, Ball Guide, Ball Spring (PAT-LS-1010) and Ball Stop (PAT-CCP-0511) from inside the Piston.

Fluid Section Assembly:

NOTE: The procedures for assembly of the Stainless Steel version and standard steel version will be the same except for Seals in the Intake Valve. For part numbers see the correct drawing in the Parts Drawing section of this manual.

PISTON and PISTON VALVE ASSEMBLY:

1. Install the Ball Stop (PAT-CCP-0511) into the bottom of the Piston.

2. Install the Spring (PAT-LS-1010) into the Piston narrow end forward.

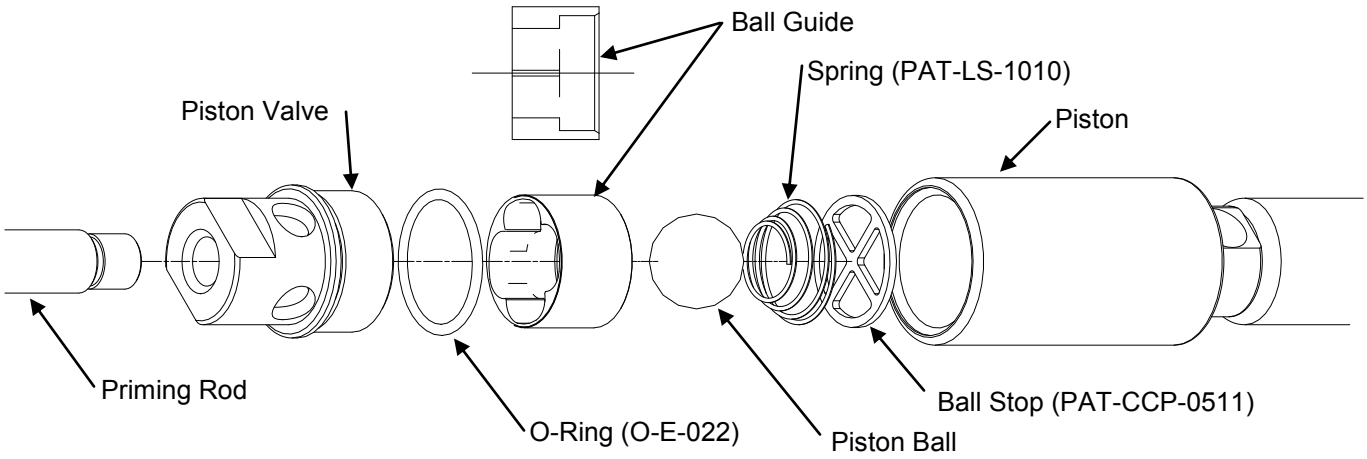
3. Insert the Ball Guide into the Piston over the Spring. (see below for proper orientation)

Note: The relief (round) end of the ball guide goes against the spring into the piston.

4. Install a new O-ring (O-E-022) onto the Piston Valve.

5. Apply a light coat of the appropriate grease to Piston Ball and place it into the Piston on top of the Spring (PAT-LS-1010).

6. Thread the Piston Valve into the end of the Piston and tighten. Set aside for now.

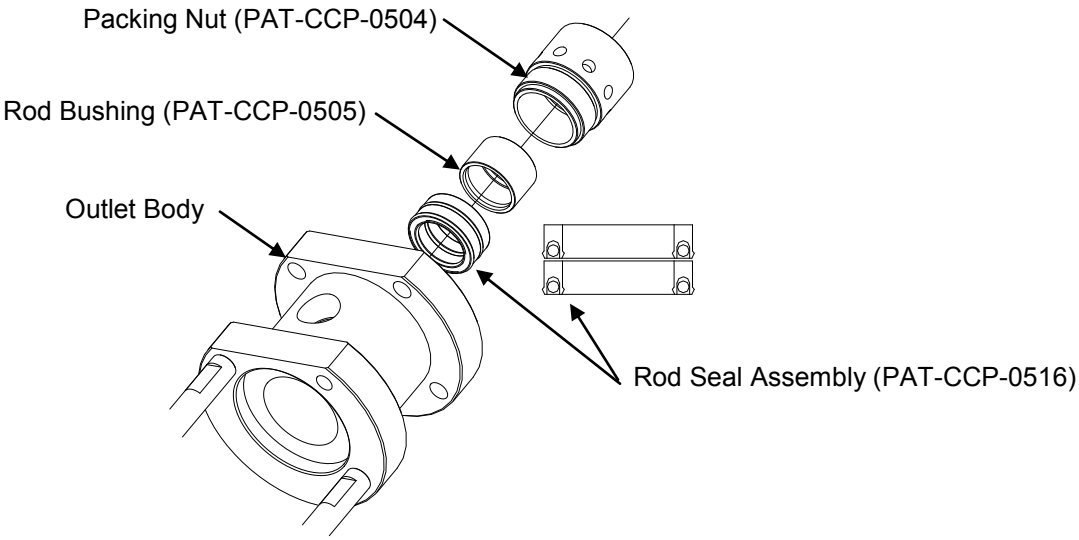


PUMP ASSEMBLY:

7. Apply a light coat of the appropriate grease to the Rod Seal Assemblies (PAT-CCP-0516). Now install them into the top of the Outlet Body. The open side (side with o-ring) goes down inside.

8. Install the Rod Bushing (PAT-CCP-0505) into the Packing Nut (PAT-CCP-0504).

9. Thread the Packing Nut (PAT-CCP-0504) into the top of the Outlet Body.

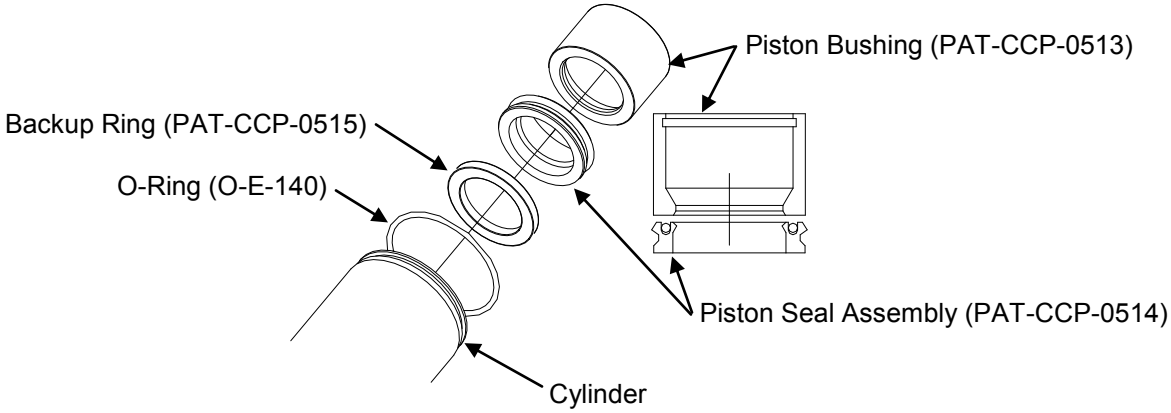


10. Apply a light coat of the appropriate grease to the Backup Ring (PAT-CCP-0515) then install into the top end of the Cylinder.

11. Apply a light coat of the appropriate grease to the Piston Seal Assembly (PAT-CCP-0514) then install it into the top end of the Cylinder on top of the Backup Ring, o-ring facing up.

12. Install the Piston Bushing (PAT-CCP-0513) into the top of the Cylinder.

13. Apply a light coat of the appropriate grease onto O-ring (O-E-140) and install onto the end of the Cylinder.

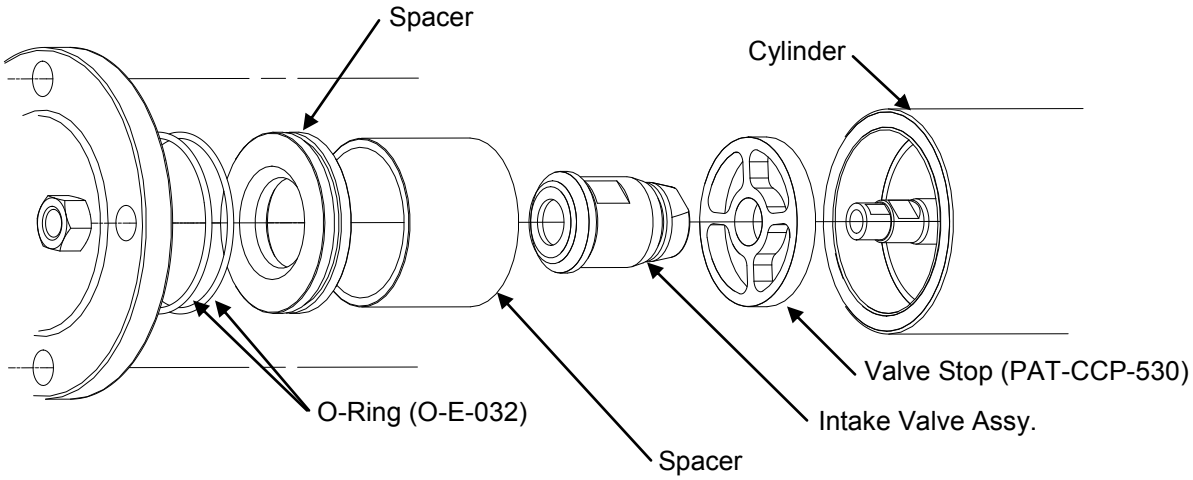


14. Install the Cylinder into the Outlet Body.

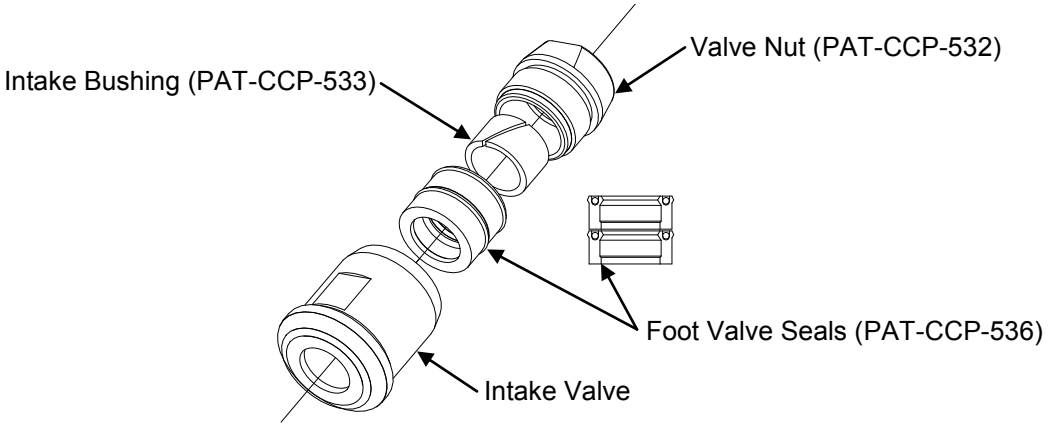
15. Apply a light coat of the appropriate grease onto the Fluid Rod assembly, now carefully push the Fluid Rod Assembly into the Cylinder, Piston Seal and Rod Seal Assemblies (PAT-CCP-0516) from the bottom and then up through the Packing Nut (PAT-CCP-0504).

16. Install the Valve Stop (PAT-CCP-0530) over the Priming Rod into the end of the Cylinder.

17. Install the Spacer into the end of the Cylinder on top of the Valve Stop.



18. Apply a light coat of the appropriate grease to the two Foot Valve Seals (PAT-CCP-0536) and install them into the Intake Valve o-ring side facing up.



19. Install the Intake Bushing (PAT-CCP-0533) into the Valve Nut (PAT-CCP-0532).

20. Thread the Valve Nut (PAT-CCP-0532) into the Intake Valve.

21. Apply a light coat of the appropriate grease to the Priming Rod and in a threading motion slide the Intake Valve assembly onto the Priming Rod.

22. Apply a light coat of the appropriate grease to a new O-ring (O-E-032) then install onto the Lower Seat.

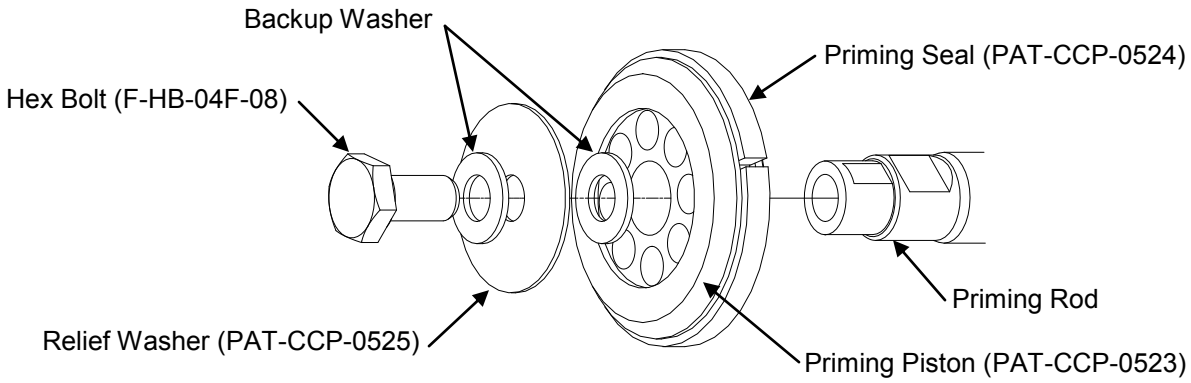
23. Install the Lower Seat into the end of the Cylinder the small chamfer side (seat) should face in towards the Intake Valve.

24. Install the Priming Seal (PAT-CCP-0524) onto the Priming Piston (PAT-CCP-0523).

25. Install the Priming Piston (PAT-CCP-0523) onto the end of the Priming Rod.

26. Install onto Hex Bolt (F-HB-04F-08) a Backup Washer (PAT-CCP-0528) then the Relief Washer (PAT-CCP-0525) then the last Backup Washer (PAT-CCP-0528)

27. Thread the Hex Bolt (F-HB-04F-08) into the end of the Priming Rod.



28. Thread the four Tie Rods (PAT-CCP-0520) into the Outlet Body.

29. Apply a light coat of the appropriate grease to a new O-ring (O-E-032) then install onto the Bell Frame (PAT-CCP- 0537).

30. Install the Inlet Bell Frame (PAT-CCP-0537) onto the end of the Tie Rods (PAT-CCP-0520) over the Priming Piston. It is preferable to install the Bell Frame so that the fitting ports are perpendicular to the pump outlet.

31. Thread the four Hex Nuts (F-HN-06C) onto the end of the Tie Rods to secure the Bell Frame and pump assembly.

FLUID SECTION INFORMATION:

Power Head Diameter (in.)	PAT-CCP-LS-0590 Putty	1:1 PAT-CCP-LS-0590-SS Adhesive
PAT-PH-3250	13 to 1	13 to 1
PAT-PH-4250	23 to 1	23 to 1
PAT-PH-7000		31 to 1

These ratios do not take in account of static or dynamic friction as well as the weight of the moving components. It is assumed that there is no fluid bypass around the piston cups or ball and seat.

- **PUMP ASSEMBLIES**

PAT-PA-CCP-1300 13:1 PUMP ASSEMBLY PAT-PH-3250 & PAT-CCP-LS-0590
PAT-PA-CCP-2300 23:1 PUMP ASSEMBLY PAT-PH-4250 & PAT-CCP-LS-0590
PAT-PA-CCP-1300-SS 13:1 PUMP ASSEMBLY PAT-PH-3250 & PAT-CCP-LS-0590-SS

- **Pump Displacement Information**

Fluid Section	Stroke Length	Displacement (in3) / Stroke	/ Cycle
PAT-CCP-LS-0590	2” (50.8 mm)	0.589 (9.6 cc)	1.178 (19.30 cc)

- **Catalyst Pump Information**

Catalyst Pump	Fluid Section	
	PAT-CCP-LS-0590	
PAT-CP-0245	.75% – 2.25 %	
PAT-CP-0550	1.3% - 5.2%	

- **Slave Arm Stickers**

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Parts Drawings:

PAT-CCP-LS-0590	PATRIOT CHOP CHECK FLUID SECTION
PAT-CCP-LS-0590-SS	STAINLESS STEEL FLUID SECTION
PAT-CCP-2300	PATRIOT CHOP CHECK PUMP ASSEMBLY
PAT-CCP-PA-2300	PATRIOT CHOP CHECK PUMP ASSEMBLY
PAT-CCP-PA-1300-SS	STAINLESS STEEL PUMP ASSEMBLY
PAT-CCP-LS-0590-RK	REPAIR KIT – CHOP CHECK PUMP

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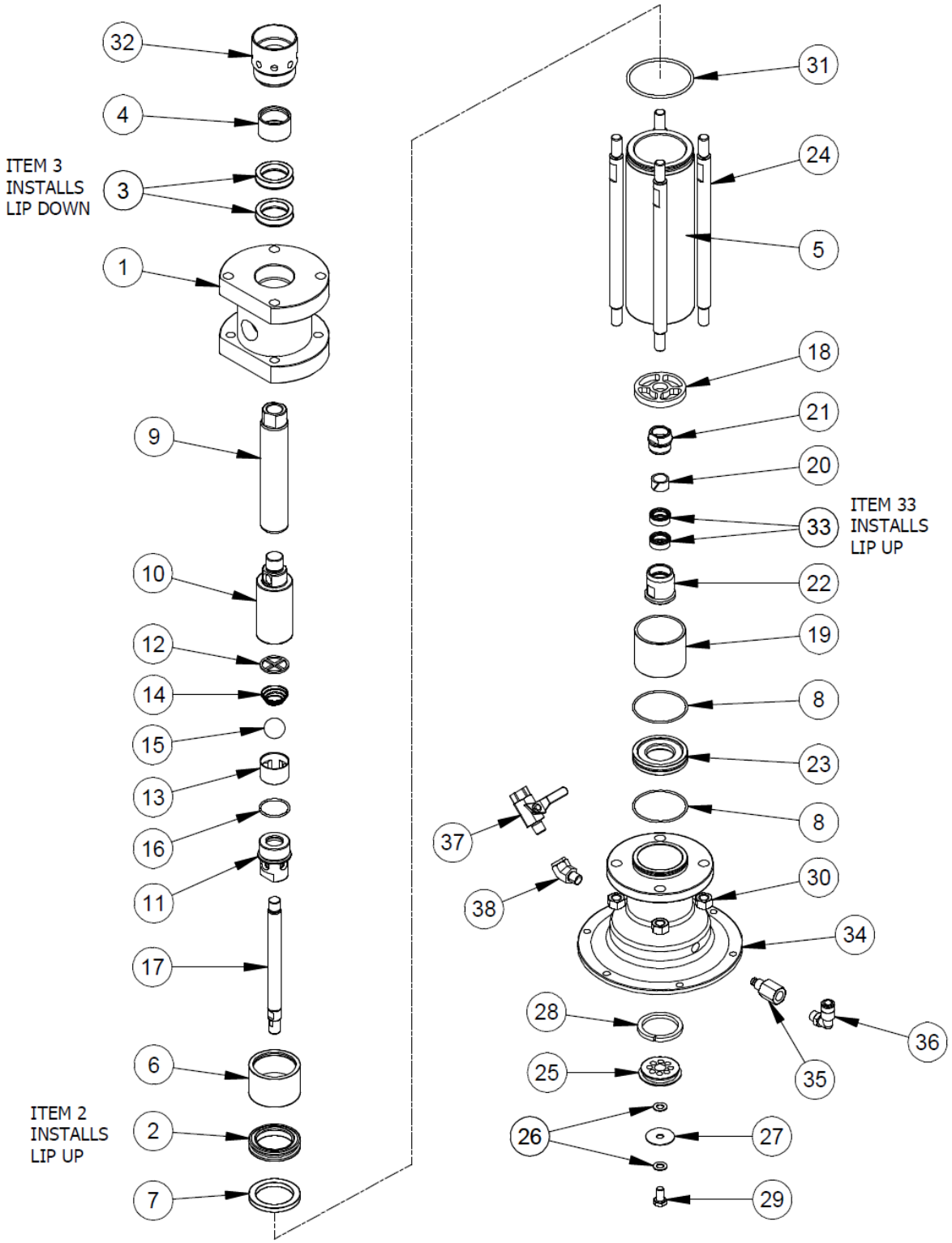


MAGNUM VENUS PLASTECH

MINI CHOPCHECK LOWER SECTION	PAT-CCP-LS-0590

REV: 11-10-08 BT2

	Parts List			
	ITEM	PART NUMBER	QTY	DESCRIPTION
	1	PAT-CCP-0501	1	OUTLET BODY
*	2	PAT-CCP-0514	1	PISTON SEAL ASSY
*	3	PAT-CCP-0516	2	ROD SEAL ASSY
	4	PAT-CCP-0505	1	ROD BUSHING
	5	PAT-CCP-0519	1	CYLINDER
	6	PAT-CCP-0513	1	PISTON BUSHING
	7	PAT-CCP-0515	1	BACKUP RING
*	8	O-E-032	2	O-RING
	9	PAT-CCP-0508	1	FLUID ROD
	10	PAT-CCP-0507	1	PISTON - 1.323 DIA
	11	PAT-CCP-0509	1	PISTON VALVE
	12	PAT-CCP-0511	1	BALL STOP
	13	PAT-CCP-0512	1	BALL GUIDE
	14	PAT-LS-1010	1	SPRING
	15	VLS-2427	1	3/4" CHROME BALL
*	16	O-E-022	1	O-RING
	17	PAT-CCP-0527	1	PRIMING ROD
	18	PAT-CCP-0530	1	VALVE STOP
	19	PAT-CCP-0529	1	SPACER
	20	PAT-CCP-0533	1	INTAKE BUSHING
	21	PAT-CCP-0532	1	VALVE NUT
	22	PAT-CCP-0531	1	INTAKE VALVE
	23	PAT-CCP-0518	1	LOWER SEAT
	24	PAT-CCP-0520	4	TIE ROD
	25	PAT-CCP-0523	1	PRIMING PISTON
	26	PAT-CCP-0528	2	BACKUP WASHER
*	27	PAT-CCP-0525	1	RELIEF WASHER
*	28	PAT-CCP-0524	1	PRIMING SEAL
	29	F-HB-04F-08	1	HEX BOLT
	30	F-HN-06C	4	HEX NUT
*	31	O-E-140	1	O-RING
	32	PAT-CCP-0504	1	PACKING NUT
*	33	PAT-CCP-0536	2	FOOT VALVE SEAL
	34	PAT-CCP-0537	1	INLET BELL FLANGE
	35	CV-CCP-1	1	CHECK VALVE
	36	MPH-2539	1	MALE ELBOW
	37	7702-2-1	1	BALL VALVE
	38	PF-SE45-02-SS	1	45 DEG STREET ELBOW

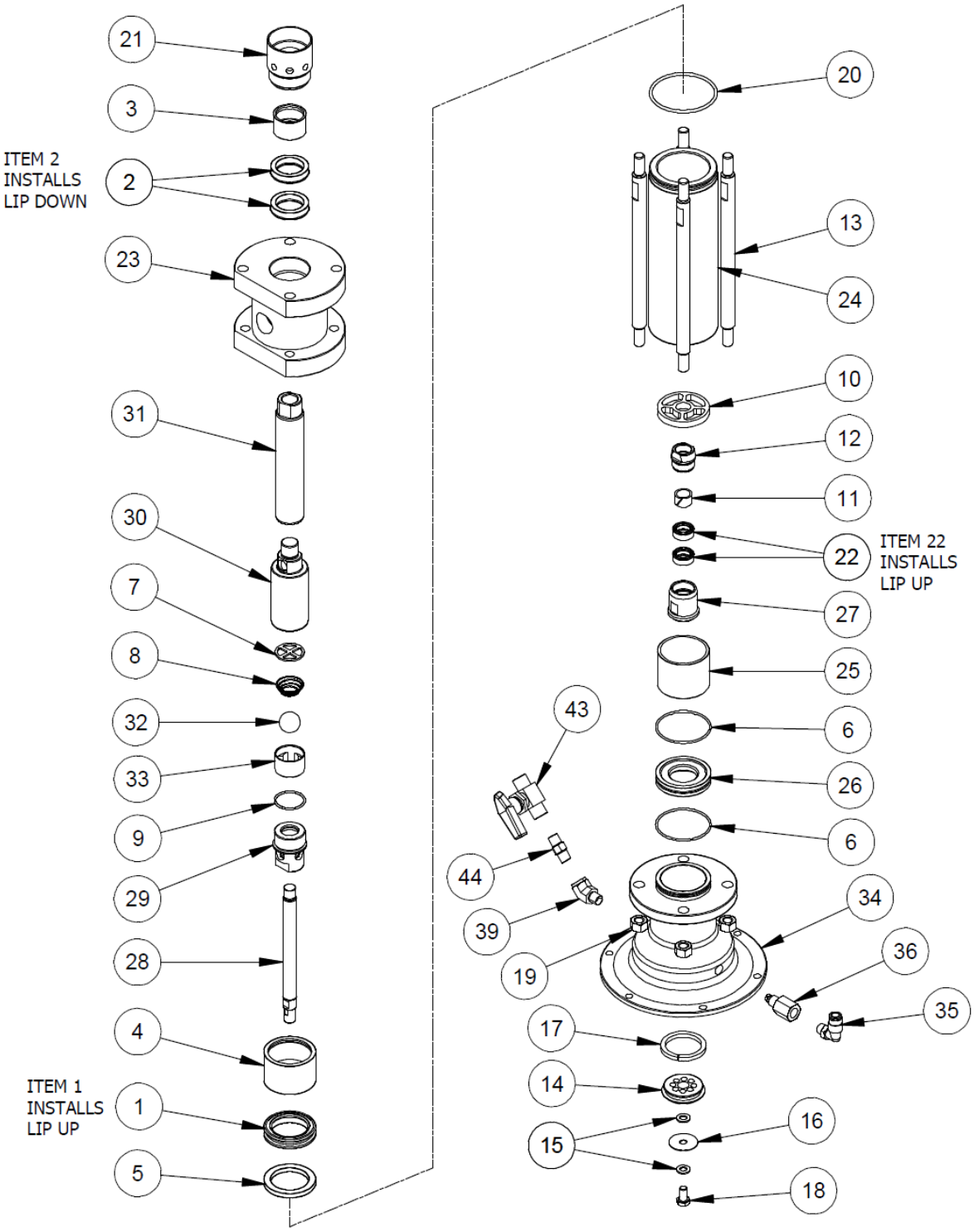
REPAIR KIT

* PAT-CCP-LS-0590-RK (ASTERISKS DENOTE PARTS IN KIT)

MAGNUM VENUS PLASTECH

MINI CHOPCHECK LOWER SECTION PAT-CCP-LS-0590

REV: 11-10-08 BT2



MAGNUM VENUS PLASTECH

MINI CHOPCHECK LOWER SECT.	PAT-CCP-LS-0590-SS

REV: 12-08-08 BT2

	Parts List			
	ITEM	PART NUMBER	QTY	DESCRIPTION
*	1	PAT-CCP-0514	1	PISTON SEAL ASSY
*	2	PAT-CCP-0516	2	ROD SEAL ASSY
	3	PAT-CCP-0505	1	ROD BUSHING
	4	PAT-CCP-0513	1	PISTON BUSHING
	5	PAT-CCP-0515	1	BACKUP RING
*	6	O-E-032	2	O-RING
	7	PAT-CCP-0511	1	BALL STOP
	8	PAT-LS-1010	1	SPRING
*	9	O-E-022	1	O-RING
	10	PAT-CCP-0530	1	VALVE STOP
	11	PAT-CCP-0533	1	INTAKE BUSHING
	12	PAT-CCP-0532	1	VALVE NUT
	13	PAT-CCP-0520	4	TIE ROD
	14	PAT-CCP-0523	1	PRIMING PISTON
	15	PAT-CCP-0528	2	BACKUP WASHER
*	16	PAT-CCP-0525	1	RELIEF WASHER
*	17	PAT-CCP-0524	1	PRIMING SEAL
	18	F-HB-04F-08	1	HEX BOLT
	19	F-HN-06C	4	HEX NUT
*	20	O-E-140	1	O-RING
	21	PAT-CCP-0504	1	PACKING NUT
*	22	PAT-CCP-0536	2	FOOT VALVE SEAL
	23	PAT-CCP-0501-SS	1	OUTLET BODY
	24	PAT-CCP-0519-SS	1	CYLINDER
	25	PAT-CCP-0529-SS	1	SPACER
	26	PAT-CCP-0518-SS	1	LOWER SEAT
	27	PAT-CCP-0531-SS	1	INTAKE VALVE
	28	PAT-CCP-0527-SS	1	PRIMING ROD
	29	PAT-CCP-0509-SS	1	PISTON VALVE
	30	PAT-CCP-0507-SS	1	PISTON - 1.323 DIA
	31	PAT-CCP-0508-SS	1	FLUID ROD
	32	VLS-2427-SS	1	3/4" SS BALL
	33	PAT-CCP-0512-SS	1	BALL GUIDE
	34	PAT-CCP-0537	1	INLET BELL FLANGE
	35	MPH-2539	1	MALE ELBOW
	36	CV-CCP-1	1	CHECK VALVE
	39	PF-SE45-02-SS	1	45 DEG STREET ELBOW
	43	MRD-1017	1	BALL VALVE
	44	PF-HN-02-SS	1	HEX NIPPLE

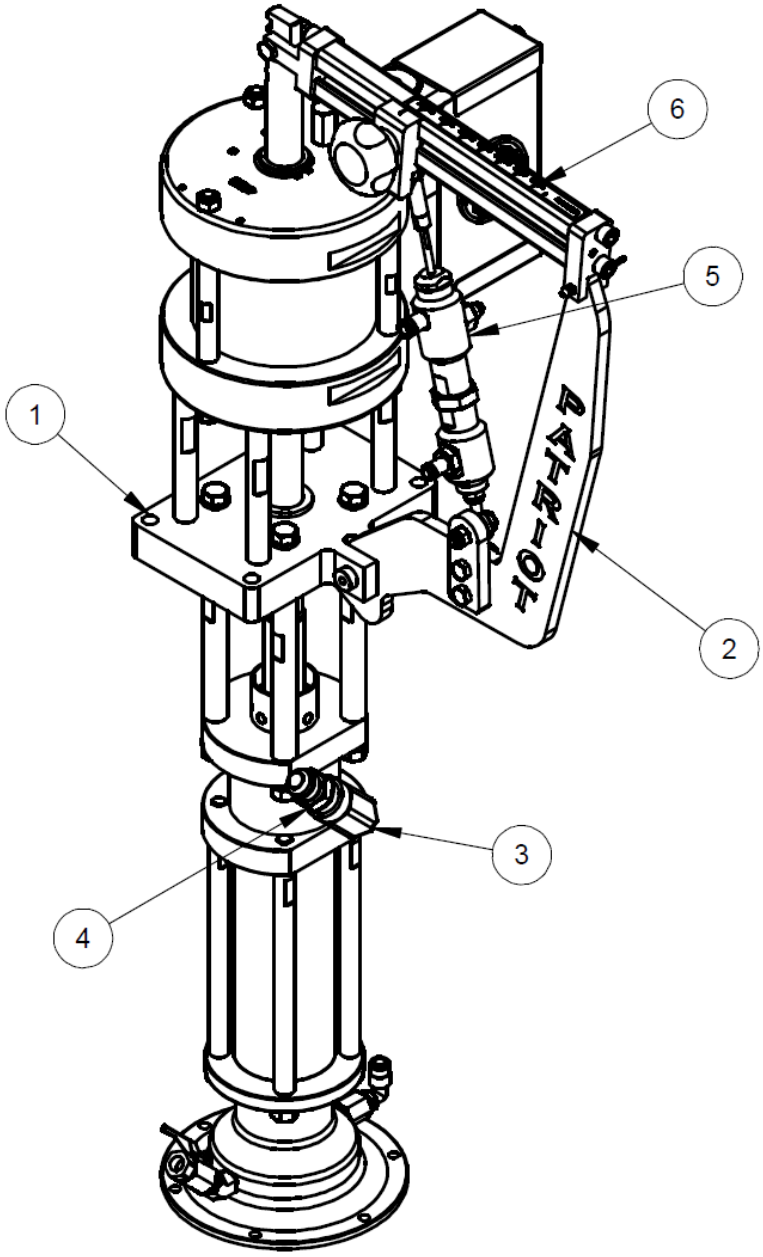
REPAIR KIT

* PAT-CCP-LS-0590-RK (ASTERISKS DENOTE PARTS IN KIT)

MAGNUM VENUS PLASTECH

MINI CHOPCHECK LOWER SECT. PAT-CCP-LS-0590-SS

REV: 12-08-08 BT2



MAGNUM VENUS PLASTECH

PUMPING SYSTEM	PAT-CCP-2300

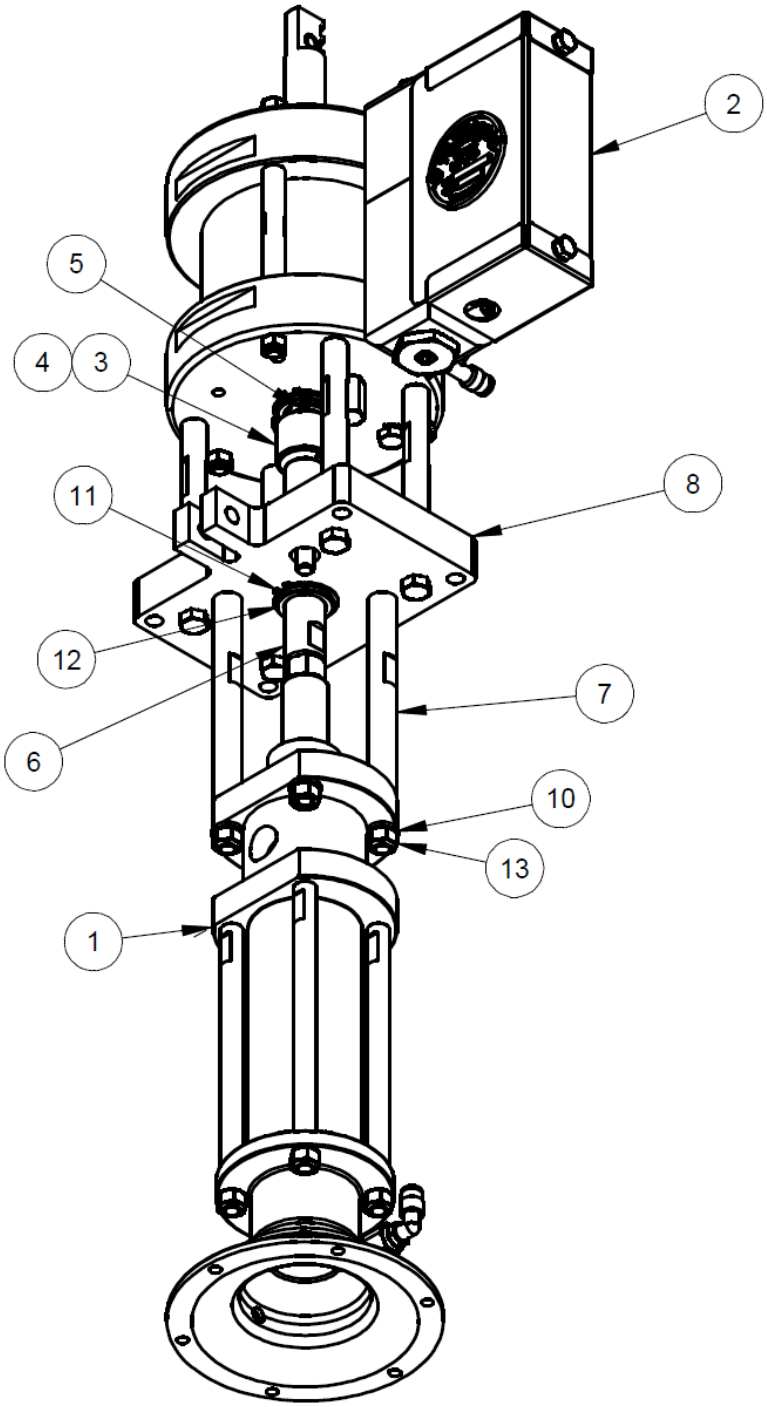
REV: 01-30-08

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	PAT-CCP-PA-2300	1	PUMP ASSY.
2	PAT-SD-3100	1	SLAVE DRIVE ASSY
3	PF-SE-08	1	STREET ELBOW
4	PF-HN-08-08J	1	HEX NIPPLE
5	PAT-CP-0245	1	CAT. PUMP ASSY.
6	PAT-RS-0590-024	1	RATIO STICKER

MAGNUM VENUS PLASTECH

PUMPING SYSTEM PAT-CCP-2300

REV: 01-30-08



MAGNUM VENUS PLASTECH

PUMP ASSEMBLY	PAT-CCP-PA-2300

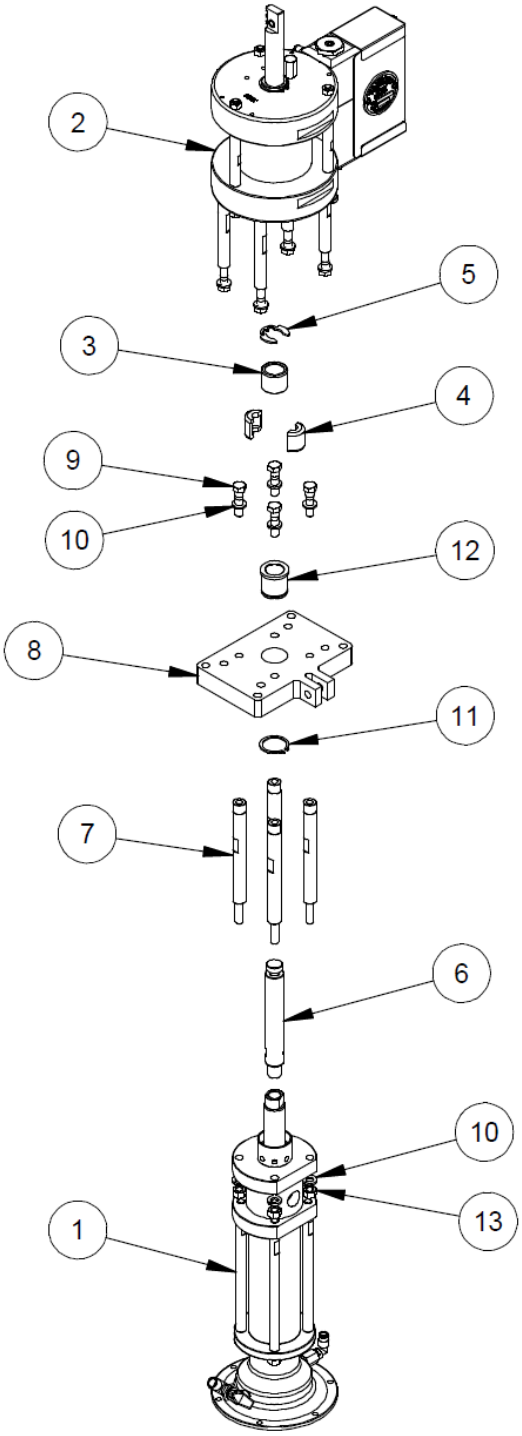
REV: 01-30-08

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	PAT-CCP-LS-0590	1	LOWER PUMP SECTION ASSY
2	PAT-PH-4250	1	POWER HEAD ASSY- 4.25 IN.
3	PAT-PA-9109	1	SHELL RETAINER
4	APP-9096	2	HALF SHELL
5	F-ER-1.00-HD	1	Ø1" E-RING HEAVY DUTY
6	PAT-CCP-0521	1	ADAPTER SHAFT
7	PAT-CCP-0522	4	ADAPTER TIE ROD
8	PAT-CCP-0503	1	TRANSITION PLATE
9	F-HB-06C-24	4	HEX BOLT
10	F-SW-06	8	LOCK WASHER
11	MPH-3261	1	SNAP RING - EXTERNAL
12	PAT-CCP-0517	1	MID BUSHING
13	F-HN-06C	4	HEX NUT

MAGNUM VENUS PLASTECH

PUMP ASSEMBLY PAT-CCP-PA-2300

REV: 01-30-08



MAGNUM VENUS PLASTECH

PUMP ASSEMBLY	PAT-CCP-PA-1300-SS

REV: 05-20-08 BT2

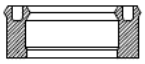
Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	PAT-CCP-LS-0590-SS	1	LOWER PUMP SECTION ASSY
2	PAT-PH-3250	1	POWER HEAD - 3-1/4" DIA
3	PAT-PA-9109	1	SHELL RETAINER
4	APP-9096	2	HALF SHELL
5	F-ER-1.00-HD	1	Ø1" E-RING HEAVY DUTY
6	PAT-CCP-0521	1	ADAPTER SHAFT
7	PAT-CCP-0522	4	ADAPTER TIE ROD
8	PAT-CCP-0503	1	TRANSITION PLATE
9	F-HB-06C-24	4	HEX BOLT
10	F-SW-06	8	LOCK WASHER
11	MPH-3261	1	SNAP RING - EXTERNAL
12	PAT-CCP-0517	1	MID BUSHING
13	F-HN-06C	4	HEX NUT

MAGNUM VENUS PLASTECH

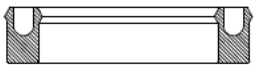
PUMP ASSEMBLY PAT-CCP-PA-1300-SS

REV: 05-20-08 BT2

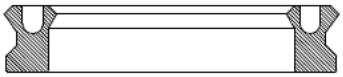
PAT–CCP–LS–0590–RK
REPAIR KIT



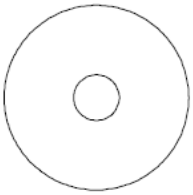
2 PCS
PAT–CCP–0536 FOOT VALVE SEAL ASSY



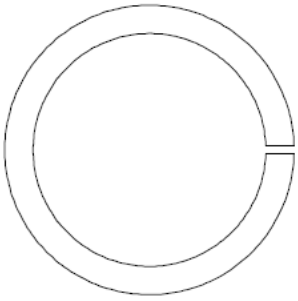
2 PC
PAT–CCP–0516 ROD SEAL ASSY



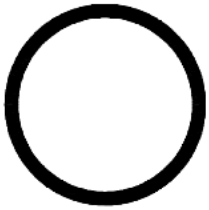
1 PC
PAT–CCP–0514 PISTON SEAL ASSY



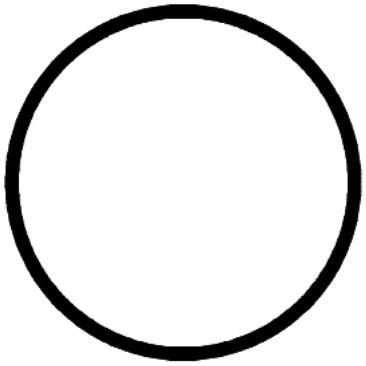
1 PC
PAT–CCP–0525 RELIEF WASHER



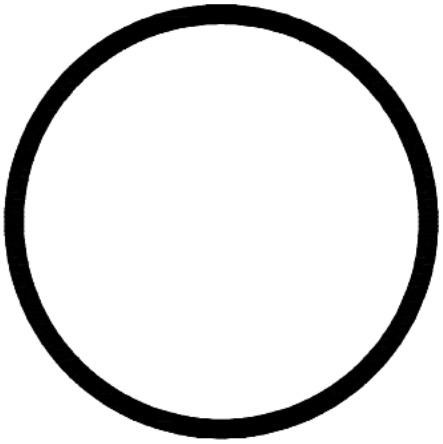
1 PC
PAT–CCP–0524 PRIMING SEAL



1 PC
O–E–022 O–RING



2 PCS
O–E–032 O–RING



1 PC
O–E–140 O–RING

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Revision Information:

Revision	Description
Rev. 11/2008	Added revision sheet, updated details and note for ball guide page 12. We updated the parts drawings chapter.
Rev. 12/2010	Updated the drawings and the Manual format. Updated the MVP logo.
Rev. 02/2012	Updated the Logo, MVP Address and the manual format and added the Terms and Conditions section. Revised this manual to include the Stainless Steel version of the fluid section PAT-CCP-LS-0590-SS
Rev. 09/2014	Updated the Address, name and the Terms & Conditions of Sale. Removed references to Plastech.

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Assemblies Covered in this Manual:

- PAT-CCP-LS-0590 Patriot Chop Check Fluid Section
- PAT-CCP-LS-0590-SS Stainless Steel Chop Check Fluid Section

- PAT-CCP-PA-1300-SS Stainless Steel Chop Check Pump Assembly
- PAT-CCP-PA-2300 Patriot Chop Check Pump Assembly